

## WHAT IS CLAIMED IS:

1. A method for driving a liquid crystal display device including a plurality of row electrodes and a plurality of column electrodes, a scanning voltage being applied to each of the plurality of row electrodes, a signal voltage being applied to each of the plurality of column electrodes, and the plurality of row electrodes intersecting the plurality of column electrodes, the method comprising the steps of:

a) determining, for each of the plurality of column electrodes, correction data for correcting the signal voltage based on an increment or decrement of an effective voltage value between each of the plurality of row electrodes and the plurality of column electrodes; and

b) applying a correction voltage for correcting the signal voltage to each of the plurality of column electrodes in accordance with the correction data,

wherein an increment or decrement of the effective voltage value includes at least either of i) an increment or decrement of an effective voltage value due to at least either a blunt waveform or induced distortion of the signal voltage or ii) an increment or decrement of an

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effective voltage value due to at least either a blunt waveform or induced distortion of the scanning voltage.

2. A method according to claim 1, wherein the correction voltage is applied to each of the plurality of column electrodes in a correction period, and the correction period equal to m horizontal scanning periods is provided in L horizontal scanning periods where L is an integer greater than or equal to 2 and m is an integer more than 0 and less than L.

3. A method according to claim 1, wherein the correction data is determined based on a position of each of the plurality of column electrodes.

4. A method according to claim 1, wherein step a) further comprises the step of:

c) detecting a change in the signal voltage applied to each of the plurality of column electrodes as a digital amount and outputting the digital amount to each of the plurality of column electrodes.

5. A method according to claim 4, wherein an increment or decrement of the effective voltage value is an

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increment or decrement of an effective voltage value due to induced distortion of the scanning voltage, and step c) further comprises the step of detecting, for each of the plurality of column electrodes, a change in the signal voltage based on a row driver control signal, and  $n^{\text{th}}$  row display data and  $(n-1)^{\text{th}}$  row display data.

6. A method according to claim 4, wherein step c) further comprises the step of detecting a change in the signal voltage for each of the plurality of column electrodes, and calculating an induced distortion count value representing the total change in the signal voltage over all of the plurality of column electrodes.

7. A method according to claim 6, wherein step a) further comprises the step of:

d) calculating, for each of the plurality of column electrodes, an induced distortion correction amount based on the induced distortion count value and a lateral position count value representing a position of each of the plurality of column electrodes in a lateral direction along the plurality of row electrodes.

8. A method according to claim 7, wherein step d) further

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comprises the steps of:

calculating an induced distortion correction variable based on the lateral position count value and a frame number; and

calculating the induced distortion correction amount based on the induced distortion correction variable and the induced distortion count value.

9. A method according to claim 7, wherein the correction voltage is applied to each of the plurality of column electrodes in a correction period, and the correction period equal to  $m$  horizontal scanning periods is provided in  $L$  horizontal scanning periods where  $L$  is an integer greater than or equal to 2 and  $m$  is an integer more than 0 and less than  $L$ , and

step a) further comprises the step of adding or subtracting an error between the correction data and the induced distortion correction amount, the correction data being applied to each of the plurality of column electrodes, to or from an induced distortion correction amount corresponding to a next correction period.

10. A method according to claim 4, wherein an increment or decrement of the effective voltage value is an

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increment or decrement of an effective voltage value due to a blunt waveform of the scanning voltage, and step c) further comprises the step of detecting, for each of the plurality of column electrodes, a signal voltage change signal based on  $n^{\text{th}}$  row display data and  $(n-1)^{\text{th}}$  row display data.

11. A method according to claim 10, wherein the signal voltage change signal includes an  $n^{\text{th}}$  row signal voltage and an  $(n-1)^{\text{th}}$  row signal voltage for each of the plurality of column electrodes.

12. A method according to claim 10, wherein step c) further comprises the step of calculating a blunt waveform correction amount for correcting a blunt waveform of the scanning voltage based on the signal voltage change signal.

13. A method according to claim 1, wherein step a) further comprises the step of calculating a gradation correction amount for correcting a gradation phenomenon based on a lateral position count value representing a position of each of the plurality of column electrodes in a lateral direction along the plurality of row electrodes.

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14. A method according to claim 1, wherein each correction voltage has a different pulse width.

15. A method according to claim 1, wherein each correction voltage has a different pulse amplitude.

16. A liquid crystal display device including a plurality of row electrodes and a plurality of column electrodes, a scanning voltage being applied to each of the plurality of row electrode, a signal voltage being applied to each of the plurality of column electrodes, and the plurality of row electrodes intersecting the plurality of column electrodes, the device comprising:

a correction operation circuit for determining, for each of the plurality of column electrodes, correction data for correcting the signal voltage based on an increment or decrement of an effective voltage value between each of the plurality of row electrodes and the plurality of column electrodes; and

a column driver unit for applying a correction voltage for correcting the signal voltage to each of the plurality of column electrodes in accordance with the correction data,

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wherein an increment or decrement of the effective voltage value includes at least either of i) an increment or decrement of an effective voltage value due to at least either a blunt waveform or induced distortion of the signal voltage or ii) an increment or decrement of an effective voltage value due to at least either a blunt waveform or induced distortion of the scanning voltage.

17. A device according to claim 16, further comprising a timing control circuit for providing a correction period, wherein the correction voltage is applied to each of the plurality of column electrodes in the correction period, and the correction period equal to  $m$  horizontal scanning periods is provided in  $L$  horizontal scanning periods where  $L$  is an integer greater than or equal to 2 and  $m$  is an integer more than 0 and less than  $L$ .

18. A device according to claim 16, wherein the correction operation circuit determines the correction data based on a position of each of the plurality of column electrodes.

19. A device according to claim 16, wherein the correction operation circuit comprises a column waveform

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change detection unit for detecting a change in the signal voltage applied to each of the plurality of column electrodes as a digital amount and outputting the digital amount to each of the plurality of column electrodes.

20. A device according to claim 19, wherein an increment or decrement of the effective voltage value is an increment or decrement of an effective voltage value due to induced distortion of the scanning voltage, and the column waveform change detection unit detects, for each of the plurality of column electrodes, a change in the signal voltage based on a row driver control signal, and  $n^{\text{th}}$  row display data and  $(n-1)^{\text{th}}$  row display data.

21. A device according to claim 19, wherein the correction operation circuit comprises a counter for detecting a change in the signal voltage for each of the plurality of column electrodes, and calculating an induced distortion count value representing the total change in the signal voltage over all of the plurality of column electrodes.

22. A device according to claim 21, wherein the correction operation circuit comprises a correction

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amount look-up table for calculating, for each of the plurality of column electrodes, an induced distortion correction amount based on the induced distortion count value and a lateral position count value representing the position of each of the plurality of column electrodes in a lateral direction along the plurality of row electrodes.

23. A device according to claim 22, wherein the correction amount look-up table comprises:

a look-up table for calculating an induced distortion correction variable based on the lateral position count value and a frame number; and

an induced distortion look-up table for calculating the induced distortion correction amount based on the induced distortion correction variable and the induced distortion count value.

24. A device according to claim 22, wherein the correction voltage is applied to each of the plurality of column electrodes in a correction period, and the correction period equal to  $m$  horizontal scanning periods is provided in  $L$  horizontal scanning periods where  $L$  is an integer greater than or equal to 2 and  $m$  is an integer

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more than 0 and less than L, and

the correction operation circuit further comprises an adder for adding or subtracting an error between the correction data and the induced distortion correction amount, the correction data being applied to each of the plurality of column electrodes, to or from an induced distortion correction amount corresponding to a next correction period.

25. A device according to claim 19, wherein an increment or decrement of the effective voltage value is an increment or decrement of an effective voltage value due to a blunt waveform of the scanning voltage, and the column waveform change detection unit detects, for each of the plurality of column electrodes, a signal voltage change signal based on  $n^{\text{th}}$  row display data and  $(n-1)^{\text{th}}$  row display data.

26. A device according to claim 25, wherein the signal voltage change signal includes an  $n^{\text{th}}$  row signal voltage and an  $(n-1)^{\text{th}}$  row signal voltage for each of the plurality of column electrodes.

27. A device according to claim 25, wherein the

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correction operation circuit comprises a blunt waveform look-up table for calculating a blunt waveform correction amount for correcting a blunt waveform of the scanning voltage based on the signal voltage change signal.

28. A device according to claim 16, wherein the correction operation circuit comprises a gradation look-up table for calculating a gradation correction amount for correcting a gradation phenomenon based on a lateral position count value representing the position of each of the plurality of column electrodes in a lateral direction along the plurality of row electrodes.

29. A device according to claim 16, wherein each correction voltage has a different pulse width.

30. A device according to claim 16, wherein each correction voltage has a different pulse amplitude.

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